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	Application No.	Applicant(s)
Notice of Allowability	10/014,455	AUST ET AL.
	Examiner	Art Unit	
	Jason M. Perilla	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *the amendment filed January 12, 2006*.

2. ☒ The allowed claim(s) is/are *claims 18-43 renumbered as claims 1-26*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a) ☐ All   b) ☐ Some*   c) ☐ None   of the:

   1. ☐ Certified copies of the priority documents have been received.

   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

   1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____ .

   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of

   Paper No./Mail Date _____ .

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application (PTO-152)

6. ☒ Interview Summary (PTO-413), Paper No./Mail Date *20060330* .

7. ☒ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____ .

DETAILED ACTION

1.   Claims 18-43 are pending in the instant application.

EXAMINER'S AMENDMENT

2.   An examiner's amendment to the record appears below. Should the changes

and/or additions be unacceptable to applicant, an amendment may be filed as provided

by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be

submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview

with Joseph C. Redmond on March 30, 2006.

The application has been amended as follows wherein the following

versions of claims 18-43 replace all prior versions in their entirety:

18. The medium storing program instructions of Claim 43 further ~~comprising~~
storing instructions for the following steps:

(e f)   ~~program instructions~~ selecting a Signal to Noise Ratio ~~via the~~
~~correlator~~ as a threshold for reliable communication in the channel;

(f g)   ~~program instructions~~ comparing the plurality of correlation values to
the threshold; and

(g h)   ~~program instructions~~ determining if the correlation values ~~is~~ are above
or below the threshold, where a correlation value below the threshold is indicative of
unreliable transmission trough the channel.

19. The medium storing program instructions of Claim 18 ~~further comprising~~:

(h) program instructions adjusting the carrier frequency to wherein the plurality of predetermined carrier frequencies are frequencies relevant for the transmission of the data signal, conditioned upon the correlation value being below the threshold; and

(i) program instructions measuring the correlation value for each carrier frequency, where the correlation value_s vs. frequency is a measure of the frequency dependent loss of the channel.

20. The medium storing program instructions of Claim 18 further comprising storing instructions for the following steps:

(j i) program instructions adjusting the power level of the data signal to compensate for attenuation of the data signal.

21. The medium storing program instructions of Claim 18 further comprising storing instructions for the following steps:

(k i)   program instructions altering the correlation value_s by adjusting either the PN code signal (f_0) or the carrier frequency (f_c).

22. The medium storing program instructions of Claim 18 further comprising storing instructions for the following steps:

(l i) program instructions adjusting the PN code signal length to compensate for a noisy environment.

23. The medium storing program instructions of Claim 18 further comprising:

(m) program instructions modulating the PN code and/or the carrier and/or the PN modulated carrier with data signal wherein steps (b) and (c) may be replaced by:

(b)' modulating the carrier with the data signal, and

(c)' modulating the data modulated carrier with the PN code signal to produce the PN coded data carrier signal.

24. The medium storing program instructions of Claim 43 further ~~comprising~~ storing instructions for the following steps:

(~~A~~ f)   ~~program instructions~~ determining the presence of an unreliable data transmission where ~~the~~ a predetermined maximum correlator value does not exceed ~~the~~ a threshold value.

25. A method of dynamic measurement of a communication channel using a Direct Sequence Spread Spectrum (DSSS) communication system, comprising the steps of:

(a) generating a Pseudo Noise (PN) code signal (f_0=1/T) having a length (l), where ~~f_0~~ f_0 = PN code signal bandwidth, and T = PN code signal chip rate;

(b) modulating a carrier (cos. $2\pi f_c$) with the PN code signal, where ~~f_c~~ f_c = carrier frequency ~~where the transmitter~~ and the carrier frequency varies among a plurality of predetermined carrier frequencies;

(c) modulating the PN coded carrier with a data signal as a PN coded data carrier signal;

(d) providing the PN coded data carrier signal to a correlator via a communication channel for extracting the ~~PN code~~ data signal from the PN coded data carrier signal; and

(e) determining, from the extracted data signal, a plurality of correlator values via a power detector ~~for determining a correlator value~~ for each of the plurality of predetermined carrier frequencies of the PN coded data carrier signal ~~communication channel from the extracted PN code~~, where the plurality of correlator values ~~is~~ are a measure of attenuation loss of the communication channel.

26. The method of Claim 25 further comprising the steps of:

(f) selecting a Signal to Noise Ratio ~~via the power detector~~ as a threshold for reliable communication in the communication channel;

(g) comparing the plurality of correlation values to the threshold in the power detector; and

(h) determining if the correlation values ~~is~~ are above or below the threshold via the power detector, where a correlation value below the threshold is indicative of unreliable transmission through the communication channel.

27. The method of Claim 25 ~~further comprising the steps of:~~

~~(f) adjusting carrier frequencies (f_c) in step (b) to~~ wherein the plurality of predetermined carrier frequencies are frequencies relevant for transmission of the PN coded data carrier signal~~;~~ and

~~(g) measuring a correlation value for each respective carrier frequency, where~~ the correlation values vs. frequency is a measure of an attenuation loss of the communication channel.

28. The method of Claim 26 further comprising the step of:

(~~f~~ i) adjusting a power level for the PN coded data carrier signal to compensate for attenuation of the communication channel ~~a transmitted data signal~~.

29. The method of Claim 26 further comprising the step of:

(~~f~~ i) altering the correlation values in step (~~d~~ e) by adjusting either the PN code signal (f_0) or the carrier frequency (f_c).

30. The method of Claim 26 further comprising the step of:

(~~f~~ i) adjusting the PN code signal length to compensate for a noisy environment on the communication channel.

31. The method of Claim 25 wherein ~~the~~ steps (b) and (c) may be replaced by: ~~of modulating the PN coded carrier with the data signal occurs before the carrier is modulated with the PN code~~

(b)' modulating the carrier with the data signal, and

(c)'. modulating the data modulated carrier with the PN code signal to produce the PN coded data carrier signal.

32. The method of Claim 25 further comprising the step of:

(f)   determining the presence of an unreliable data transmission where a predetermined maximum correlator value does not exceed a threshold value.

33. The method of claim 25 further comprising:

(f) wherein the step of providing the PN coded data carrier signal to the correlator via the communication channel includes a channel noise signal for determining transmission characteristics of the communication channel;

(g f)   selecting a Signal to Noise Ratio as a threshold for reliable communication in the communication channel;

(h g)   comparing a the plurality of correlation values of the PN code to the threshold value; and

(i)—[,] wherein the step of determining a correlation value above the threshold is indicative of reliable transmission through the communication channel and the communication channel includes a channel noise signal which determines characteristics of the communication channel.

34. A system of dynamic measurement of a communication channel using a Direct Sequence Spread Spectrum (DSSS) communication system, comprising:

(a) a code generating apparatus which generates a Pseudo Noise (PN) code signal (f_0 =1/T) having a length (I), where f₀ f_0 = PN code signal bandwidth, and T = PN code signal chip rate;

(b) a frequency-controlling apparatus that varies a carrier frequency among a plurality of predetermined frequencies relevant for transmission;

(b c)   a carrier modulating apparatus which modulates a the carrier (cos.
$2\pi f_c$) with the PN code signal where f_c f_c = carrier frequency;

(c d)   a data modulating apparatus which modulates the PN coded carrier
with a data signal as a PN coded data carrier signal;

(d e)   a transmitter apparatus which transmits the PN coded data carrier
signal to a correlator via a communication channel for determining transmission
characteristics of the channel;

(e) a frequency-controlling apparatus that tunes the carrier frequency to
predetermined frequencies relevant for the transmission of the data signal;

(f) a synchronizing apparatus which determines a correlator value for each of
the plurality of predetermined frequencies; and

(g) a power detector apparatus which keeps track of the plurality of correlator
values and thereby determines the an attenuation loss of the communication channel.

35. The system of Claim 34 wherein the power detector apparatus selects a
Signal to Noise Ratio as a threshold for reliable communication in the communication
channel, and determines if the plurality of correlation values is are above or below the
threshold, where a correlation value below the threshold is indicative of unreliable
transmission through the communication channel and a correlator value above the
threshold is indicative or reliable transmission through the communication channel.

36. The system of Claim 35 wherein the power detector apparatus adjusts the
power level of the data signal is adjusted to compensate for attenuation of the
transmitted data signal.

37. The system of Claim 35 wherein the correlation values is are altered by
adjusting either the chip rate of the PN code signal (f_0) or the carrier frequency (f_c).

38. The system of Claim 34 35 wherein the length of the PN code signal is
adjusted to compensate for a noisy environment.

39. The system of Claim ~~34~~ 38 wherein the presence of an unreliable data transmission is determined where a predetermined maximum PN code length does not exceed the threshold value.

40.   A system of dynamic measurement of a communication channel using Direct Sequence Spread Spectrum (DSSS) communication system, comprising:

(a) a code generating apparatus which generates a Pseudo Noise (PN) code signal ($f_0 = 1/T$) having a length (I), where ~~f₀~~ f_0 =PN code signal bandwidth, and T = PN code signal chip rate;

(b) a carrier modulating apparatus which modulates a carrier (cos. $2\pi f_c$) with the PN code where ~~f𝒸~~ f_c = carrier frequency where the carrier frequency varies among a plurality of predetermined carrier frequencies;

(c) a data modulating apparatus which modulates the PN coded carrier with a data signal as a PN coded data <u>carrier</u> signal;

(d) a transmitter apparatus which transmits the PN coded data <u>carrier</u> signal to a correlator via a communication channel for determining transmission characteristics of the channel; and

(e) power detecting apparatus which select a Signal to Noise Ratio as a threshold for reliable communication in the communication channel; determines a correlator value for each of the <u>plurality of</u> frequencies of the <u>carrier</u> ~~communication channel~~ from the <u>PN coded data carrier signal</u> ~~extracted PN code~~, and compares the correlation value<u>s</u> ~~of the PN code~~ to the threshold value to determine if the correlation value<u>s</u> ~~is~~ <u>are</u> above or below the threshold; where a correlation value below the threshold is indicative of unreliable transmission through the communication channel and a correlator value above the threshold is indicative of reliable transmission through the communication channel.

41. A method of dynamic measurement of a communication channel using Direct Sequence Spread Spectrum (DSSS) communication system, comprising the steps of:

(a) generating a Pseudo Noise (PN) code signal ($f_0 = 1/T$) having a length (l), where f_0 = PN code signal bandwidth, and T = Chip rate;

(b) modulating a carrier (cos. $2\pi f_c$) with the PN code signal, where f_c $\underline{f_c}$= carrier frequency where the carrier frequency varies among a plurality of predetermined carrier frequencies;

(c) modulating the PN coded carrier with a data signal as a PN coded data carrier signal;

(d) providing the PN coded data carrier signal to a correlator via a communication channel for determining transmission characteristics of the communication channel;

(e) determining a correlator value from the PN coded data signal for each of the plurality of predetermined frequencies of the carrier signal;

(f) selecting a Signal to Noise Ratio as a threshold via a power detecting apparatus:

(g) comparing the correlation values to the threshold value; and

(h) determining if the correlation value for each of the plurality of predetermined frequencies of the carrier signal communication channel from the PN coded data carrier signal extracted PN code is above or below the threshold, where the correlator value is a measure of attenuation loss of the communication channel, where a correlation value below the threshold is indicative of unreliable transmission through the communication channel and a correlator value above the threshold is indicative of reliable transmission through the communication channel.

42.   A system of dynamic measurement of a communication channel using Direct Sequence Spread Spectrum (DSSS) communication system, comprising:

(a) a code generating apparatus which generates a Pseudo Noise (PN) code signal ($f_0 = 1/T$) having a length (l), where f_0 $\underline{f_0}$ = PN code signal bandwidth, and T = PN code signal chip rate;

(b) a carrier modulating apparatus which modulates a carrier (cos. $2\pi f_c$) with the PN code where ~~f_c~~ f_c = carrier frequency where the carrier frequency varies among a plurality of predetermined carrier frequencies;

(c) a data modulating apparatus which modulates the PN coded carrier signal with a data signal as a PN coded data carrier signal;

(d) a transmitter apparatus which transmits the PN coded data carrier signal to a correlator apparatus via a communication channel for determining transmission characteristics of the channel;

(e) a the correlator apparatus to determine a correlator value from the PN coded data carrier signal for each of the plurality of predetermined frequencies of the carrier signal;

(f) a power detecting apparatus which select a Signal to Noise Ratio as a threshold for reliable communication in the channel, and

(g) a comparing apparatus to compare the ~~correlation~~ correlator values to the threshold value; and

~~(h)~~ determine if the correlation values for each of the plurality of predetermined frequencies of the ~~communication channel~~ carrier signal from the coded data carrier signal are ~~extracted PN code is~~ above or below the threshold; where a correlation value below the threshold is indicative of unreliable transmission through the communication channel and a correlator value above the threshold is indicative of reliable transmission through the communication channel.

43. A medium storing program instructions, executable on a computer system for dynamic measurement of a communication channel using a Direct Sequence Spread Spectrum (DSSS) communication system, ~~comprising~~ to perform the following steps:

(a) ~~program instructions for~~ generating a Pseudo Noise (PN) code signal (f_0 =1/T) having a length (l), where ~~f_0~~ f_0 =PN code signal bandwidth, and T = PN code signal chip rate;

(b) ~~program instructions for~~ modulating a carrier (cos. $2\pi f_c$) with the PN code signal, where ~~f_c~~ f_c = carrier frequency and the carrier frequency varies among a plurality of predetermined carrier frequencies;

(c) ~~program code for~~ modulating the PN coded carrier with a data signal as a PN coded data <u>carrier</u> signal;

(d) ~~program instructions for~~ providing the PN coded data <u>carrier</u> signal to a correlator via a communication channel for determining transmission characteristics of the communication channel; and

(e) ~~program instructions for~~ determining a correlator value for each of the <u>plurality of predetermined</u> frequencies of the <u>carrier</u> ~~communication channel~~ from the <u>PN coded data carrier signal</u> ~~extracted PN code~~, where the correlator value<u>s</u> ~~is~~ <u>are a</u> measure of attenuation loss of the communication channel.

Claim 43 is renumbered as claim 1, claims 18-42 are renumbered as claims 2-26, and the claim dependency is renumbered accordingly.

Allowable Subject Matter

3.   Claims 18-43 renumbered as claims 1-26 are allowed.

4.   The following is an examiner's statement of reasons for allowance:

Claims 18-43 renumbered as claims 1-26 are allowable because the prior art of record does not disclose or obviate a spread spectrum communication system where the transmitter carrier frequency is varied among a plurality of predetermined carrier frequencies and a correlator is used to determine a correlator value for each of the frequencies to find the attenuation loss of the communications channel..

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason M. Perilla whose telephone number is (571) 272-3055. The examiner can normally be reached on M-F 8-5 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Jason M. Perilla
March 30, 2006

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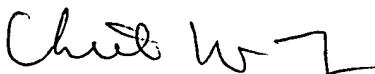
CHIEH M. FAN
SUPERVISORY PATENT EXAMINER